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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/391,059	09/07/1999	VASUDEVAN PARTHASARATHY	RCA88495	8006

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EXAMINER

CHANG, EDITH M.

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 07/21/2004

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/391,059

Applicant(s)

PARTHASARATHY ET AL.

Examiner

Edith M Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16, 18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed May 3, 2004 have been fully considered but they are not persuasive.

Argument: Applicants maintain their disagreement as stated in Applicants' prior response.

Response: Examiner maintains the response for the disagreement as stated in the Examiner's prior action.

Argument: As stated in Applicants' specification: demapper 60 of Figure 11 advantageously avoids such catastrophic error propagation by employing a feed-forward technique involving the feed-forward of prior state or decoded outputs rather than the feedback of intermediate state or decoded data. As such, each of Applicants' independent claims require "feedforward processing" or a "feed-forward processor".

Response: The limitations (e.g. prior state or decoded outputs rather than the feedback of intermediate state or decoded data, the limitations stated in the specifications as listed in the argument) in the specification do not read in the claim when these limitations are *not recited in the claim* (see MPEP 2111).

Argument: As such, each of Applicants' independent claims require "feedforward processing" or a "feed-forward processor" (e.t., see Applicants' claims, 1, 5, 13, and 18). In contrast, consider FIG.11 of Hu.

Response: FIGURE 1 of Hu shows the 60 DEMAPPER feedforward processing the *re-encoded symbol* data (the output of 50 RE-ENCODER) to produce

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difference data representative as *recited in claims* 1, 5, 13, and 18 of the invention.

Wherein the re-encoded symbol data from the 50 RE-ENCODER inputs to the DEMAPPER to produce difference data representative, the DEMAPPER feedforward processes the re-encoded symbol data. In Fig. 11 the re-encoded is fed to 960 and delayed by 986 then to MUX 970 and 955, feedforwarding to 950, therefore the re-encoded data is feedforward processed.

The rejections are upheld as the following:

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-16, 18-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Hu et al. (US Patent 5914988).

Regarding **claims 1 & 5**, Hu et al. discloses all subject matter claimed: a decoder and its method (FIGURE 1), it comprises a delay element (70 FIGURE 1) for delaying received encoded symbol data (DATA 1 FIGURE 1, column 3 lines 30-35) to produce delayed data; a re-encoder (50 FIGURE 1) for re-encoding decoded symbol representative data (output 40 FIGURE 1) to produce re-encoded symbol data; and a processor (60

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FIGURE 1, FIGURE 11) for feed-forward processing the re-encoded symbol data (output 50 FIGURE 1) to produce difference data representative (output 960 FIGURE 11) of a difference between successive symbols of the re-encoded symbol data (the successive symbols are: S_{n-1} from 950, S_n from RE-ENCODED DATA of FIGURE 11; the difference is provided by the 960 as stated in column 13 lines 57-65, wherein the 960 does the comparing. Also Hu et al. suggests to compute the distance of the encoded input symbol by look-up tables or with subtraction, absolute value and comparison operations in column 7 lines 20-25); and deriving decoded symbol data (output 977 FIGURE 11) using the delayed data (INPUT DATA FROM 70 of 950 FIGURE 11) and the difference data (two inputs of 960: one from UNIT 70, one from RE-ENCODED DATA FIGURE 11).

Regarding **claims 2 & 6**, Hu et al. discloses the feed-forward processing is exclusive of feed-back processing where the delayed data (70-60 FIGURE 1) used in demapper.

Regarding **claims 3 & 7**, Hu et al. discloses the feed-forward processing prevents error induced by feed-back processing (FIGURE 11) where the demapper uses the re-encoded data and delayed received data (from unite 70).

Regarding **claims 4 & 10**, Hu et al. discloses that the decision processor and its steps of comparing candidate values between the delayed data (input from unit 70 of 950 FIGURE 11) and the difference data (re-enocded data and input of 950 from 955 to LOO-UP TABLE 960 FIGURE 11) to determine minimum distance values (column 13 line 57-column 14 line 28), and resolving equality between determined minimum distance values in response to a prior delay and fed back comparison representative output (975-970-950 FIGURE 11, column 14 lines 11-28).

Regarding **claim 8**, Hu et al. discloses a decision processor (960 FIGURE 11) for deriving the decoded symbol data by computing an absolute distance using the difference data and the corresponding delayed received encoded symbol of the delayed data (output of 955 & RE-ENCODED DATA, input from unit 70 FIGURE 11, column 13 line 57-column 14 line 10).

Regarding **claim 13**, Hu et al. disclose all subject matter claimed: a decoder (FIGURE 1) comprising: a delay element (70 FIGURE 1) for delaying received encoded symbol data; a re-encoder (50 FIGURE 1) for re-encoding decoded symbol; and a processor (60 FIGURE 1) including, a feed-forward processor (950-955-965 FIGURE 11) for processing the re-encoded symbol data exclusively of feed-back processing (where the delayed data, input from unit 70 FIGURE 11 is used) in order to produce difference data representative of a difference between successive symbols of the re-encoded symbol data (the successive symbols are: S_{n-1} from 950, S_n from RE-ENCODED DATA of FIGURE 11; the difference is provided by the 960 as stated in column 13 lines 57-65, wherein the 960 does the comparing. Also Hu et al. suggests to compute the distance of the encoded input symbol by look-up tables or with subtraction, absolute value and comparison operations in column 7 lines 20-25); a decision processor (960 FIGURE 11) for deriving the decoded symbol data by computing an absolute distance using the difference data and the delayed data (output of 955 & re-encoded, input from unit 70 FIGURE 11, column 13 line 57-column 14 line 10).

Regarding **claims 9 & 14**, Hu et al. discloses a decision processor (960 FIGURE 11) for deriving the decoded symbol data by computing an absolute distance using the difference data and the delayed data (output of 955 & re-encoded, input from unit 70

FIGURE 11, column 13 line 57-column 14 line 10); a comparator (960 FIGURE 11 does the comparison) for comparing the absolute distance values to determine a minimum symbol difference value in column 7 lines 20-25 and column 13 lines 64-67, wherein the computing the distance to determine a minimum symbol difference value is done by look-up tables or with subtraction, absolute value and comparison operations that the comparison is well known done by the comparator.

Regarding **claim 11**, Hu et al. discloses the prior delayed fed back comparison representative output (975-970 FIGURE 11) is only used in the case of equality between candidate minimum distance values (985-970 FIGURE 11, column 14 lines 11-15).

Regarding **claim 12**, Hu et al. discloses the processor derives decoded symbol data in a partial response system (10 FIGURE 1, column 3 lines 9-20).

Regarding **claim 15**, further Hu et al. discloses a comparator (960 FIGURE 11) for comparing candidate values between the delayed data (input from unit 70 FIGURE 11) and the difference data (input from re-encoded data & output 950) to determine minimum distance and resolving equality between determined minimum values (950-960 FIGURE 11) in response to a prior delayed and fed back output (output 970 to adder 950, column 14 lines 11-28).

Regarding **claim 16**, Hu et al. discloses a different configuration in resolving equality between candidate distances (975-980-970-950, 985-970 FIGURE 11) than is used for deriving the difference data (965-970-950 FIGURE 11).

Regarding **claim 18**, Hu et al. disclose all subject matter claimed: a trellis decoding apparatus (FIGURE 1) comprising: a delay element for delaying received encoded symbol data to produce delayed data (70 FIGURE 1); a re-encoder re-encoding

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decoded symbol representative data (50 FIGURE 1); a processor (60 FIGURE 1) processing the re-encoded data; and deriving decoded symbol data using the delayed data (column 4 lines 24-34), for processing the re-encoded data (950-955 FIGURE 11); a decision processor (960 FIGURE 11) for deriving the decoded symbol data using the delayed data and the difference data (950-955-977 FIGURE 11, column 13 line 57-column 14 line 10).

Regarding **claim 19**, Hu et al. discloses the processor deriving decoded symbol data using past subset outputs (977-970-955-950-960 FIGURE 11).

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
July 2, 2004



**CHIEH M. FAN
PRIMARY EXAMINER**